



Split Brake System Warning Indicator Electrical Test

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. To define the tests that will determine if a vehicle meets the split service brake requirements of Section 5.3 of Federal Motor Vehicle Safety Standard (FMVSS) FMVSS 105, Section 5.5 of FMVSS 135, and the corresponding sections of the Technical Standards Documents (TSD) of Canadian Motor Vehicle Safety Standard (CMVSS) CMVSS 105 and CMVSS 135.

1.2 Applicability. This standard applies to passenger cars manufactured on or after September 1, 2000, and to multi-purpose passenger vehicles, trucks, and buses with a Gross Vehicle Weight Rating (GVWR) of 3500 kg (7716 lb) or less, manufactured on or after September 1, 2002 (CMVSS 135 and FMVSS 135) and to multi-purpose passenger vehicles, trucks, and buses with a GVWR of 3500 kg (7716 lb) or more (CMVSS 105 and FMVSS 105).

1.2.1 Legal Requirements. The CMVSS 105/CMVSS 135 and FMVSS 105/FMVSS 135 requirements are found in the General Motors Automotive Regulation Information Database (ARID), maintained by the GM Regulations and Certification group. ARID contains the most recent versions of the CMVSS and FMVSS requirements, and supersedes those listed in any test procedure. Guidance for interpreting CMVSS and FMVSS requirements may be obtained from GM Safety Regulations and Certification group.

1.2.2 Uniform Parts Classification (UPC). The UPC comprehended in this procedure is UPC 12.

1.3 Remarks. This test covers Section 5.3 of FMVSS 105, Section 5.5 of FMVSS 135, and the corresponding sections of the TSD of CMVSS 105 and CMVSS 135. The intent of this test is to exercise all required indicator systems. This test is not intended to show that the actual failure, as described in the CMVSS 105/CMVSS 135 and FMVSS 105/FMVSS 135, will cause the indicators to illuminate.

Production intent test vehicles must be used. A vehicle representative of the United States market must be used for the specific FMVSS requirements and a vehicle representative of the Canadian market must be used for the specific CMVSS requirements.

All components involved must have the latest production intent released level software and production intent calibrations.

This test is a supplement to GMW15102 (compliance to FMVSS 135) and GMW15106 (compliance to FMVSS 105).

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

CMVSS 101	CMVSS 135	FMVSS 105	FMVSS 135
CMVSS 105	FMVSS 101		

2.2 GM Standards/Specifications.

GMW15102	GMW15106	GMW15924 (ID)
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2.3 Additional References.

- Auto Part Numbers Vehicle Spy executable available from Global Document Management (GDM) at Uniform Resource Locator (URL): <https://documents.naeng.gm.com/gdm3/drl/objectId/0b0163bc81857164> (ID)
- CG190 Evaluation Report Template (ID)
- General Motors Automotive Regulation Information Database (ARID) available at URL: <https://businessconnect.gm.com/sites/ARID/SitePages/Home.aspx>
- GMW15924 Evaluation Report (ID)

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3 Resources

3.1 Facilities. An ambient garage environment is required but see Data Sheet A1 in Appendix A (completed by Test Requestor) for any other facility requirements.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment. No special equipment is required but see Data Sheet A1 in Appendix A (completed by Test Requestor) for any other equipment requirements.

3.3 Test Vehicle/Test Piece. The test vehicle(s) should be selected as being representative of the group of vehicles whose compliance to CMVSS 105/CMVSS 135 and FMVSS 105/FMVSS 135 is being demonstrated. Tests that are specific to either CMVSS 105/CMVSS 135 or FMVSS 105/FMVSS 135 may only be run on vehicles that are representative of that market. See 1.3 for further clarification.

3.4 Test Time.

Calendar time: 2 days
Test time: 8 hours
Coordination time: 8 hours

3.5 Test Required Information. Data Sheet B1 in Appendix B (completed by Test Requestor).

3.6 Personnel/Skills. The Tester must have 20/20 vision with or without correction.

4 Procedure

4.1 Preparation. Obtain completed Data Sheet B1 in Appendix B. **Note:** The Test Requestor is responsible for the completion of Data Sheet A1 in Appendix A and identification of tests NOT needed to be performed by marking Not applicable (N/A) as appropriate on Data Sheet B1 in Appendix B.

4.2 Conditions. The split brake system warning indicator electrical test requires no specific test conditions.

4.2.1 Environmental Conditions. An ambient garage environment is required but see Data Sheet A1 in Appendix A (completed by Test Requestor) for any other environmental conditions.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions. Complete Data Sheet B1 in Appendix B, as supplied in 4.1, by following the instructions on the data sheet. See 4.2.

4.3.1 Acceptable Telltale Clearing Methods. The only acceptable method of extinguishing an indicator/Telltale (TT) during execution of this procedure is through an ignition cycle, with or without a vehicle drive off, e.g., drive vehicle above 13 km/h (8 mph). If any electronic tool method is required to clear a TT, suspend test and contact Test Requestor.

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5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

5.2.1 Passing of the CMVSS 101 and FMVSS 101 related sections of GMW15924, for all the brake indicators evaluated in this test is required. The information from GMW15924 shall be recorded in the appropriate sections of Data Sheet A1 in Appendix A by the Test Requestor.

5.2.2 Only "Yes" answers to the "Yes" or "No" questions on Data Sheet A1 in Appendix A and Data Sheet B1 in Appendix B constitute passing this procedure. If "No" answers result, contact the Test Requestor immediately.

5.3 Test Documentation.

Note: The Test Requestor is responsible for this section.

5.3.1 The creation of an Electrical Vehicle Content (EVC) sheet and pictures of in-vehicle clusters (all variants domestic and export) with all relevant TT illumination are required in Data Sheet A1 in Appendix A for vehicle configuration traceability. GM Personnel can obtain EVC using the Auto Part Numbers Vehicle Spy executable available from Global Document Management (GDM) at Uniform Resource Locator (URL): <https://documents.naeng.gm.com/gdm3/drl/objectId/0b0163bc81857164>.

5.3.2 Complete and include Data Sheet A1 in Appendix A and Data Sheet B1 in Appendix B as part of the Evaluation Report, e.g., CG190.

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

7 Notes

7.1 Glossary.

Antilock Brake System (ABS): A portion of a service brake system that automatically controls the degree of rotational wheel slip during braking by:

- Sensing the rate of angular rotation of the wheels;
- Transmitting signals regarding the rate of wheel angular rotation to one or more controlling devices which interpret those signals and generate responsive controlling output signals; and
- Transmitting those controlling signals to one or more modulator devices, which adjust brake-actuating forces in response to those signals.

Electric Vehicle (EV): A motor vehicle that is powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electrical current, and which may include a non-electrical source of power designed to charge batteries and components thereof.

Electrically-Actuated Service Brakes: Service brakes that utilize electrical energy to actuate the foundation brakes

Functional Failure: A failure of a component (either electrical or mechanical in nature) that renders the system totally or partially inoperative yet the structural integrity of the system is maintained.

Hydraulic Brake System: A system that uses hydraulic fluid as a medium for transmitting force from a service brake control to the service brakes and that may incorporate a brake power assist unit, or a brake power unit.

Indicators:

- The Common indicator is a single indicator that illuminates when one or more failures/conditions occur.
- An Individual indicator illuminates only when one specific failure/condition occurs.

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